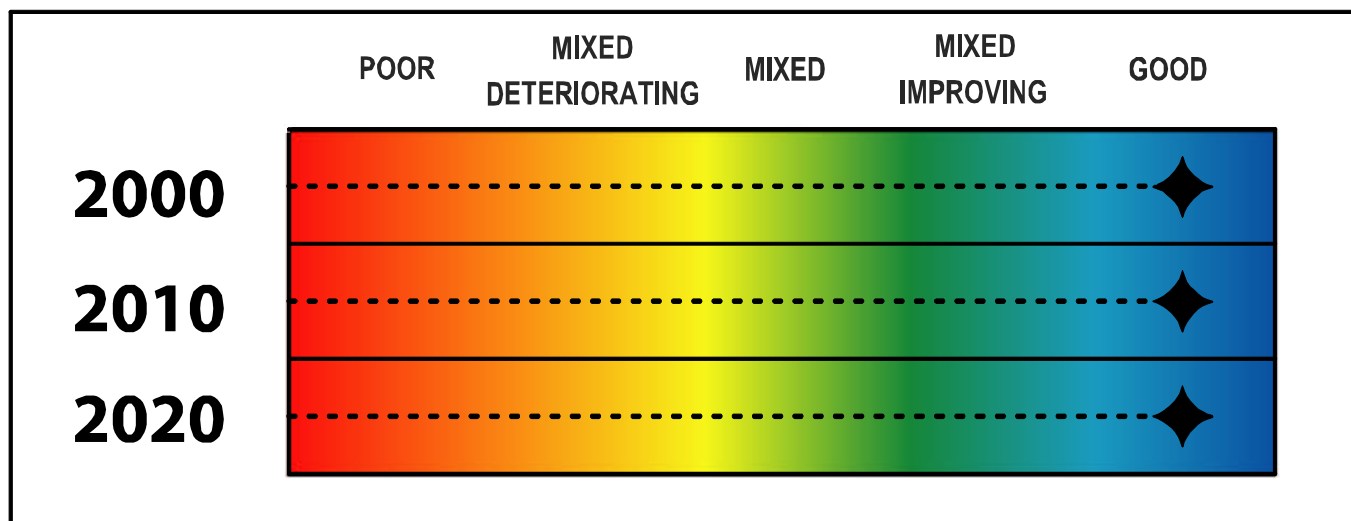


Subgoal 2

Can we drink the water?



Status

The drinking water in the Lake Michigan basin is of good quality, although there have been sporadic outbreaks of illness related to drinking water. The waters of Lake Michigan and surrounding areas are a primary source of drinking water for 10 million people who live in the basin. The Lake Michigan states currently are delegated to run their own drinking water programs. Since LaMP 2000 the issue of ground water depletion has been growing in importance with implications for drinking water sources and habitat (see Chapter 6 for more information on ground water).

Challenges

- To understand possible vulnerabilities in water sources and prepare protection plans.
- To monitor for possible new contaminants.
- To understand the implications and monitor groundwater depletion in the basin as it relates to Lake Michigan as a source.
- To educate the public on the hydrological cycle and the need for stewardship of both drinking water quantity and quality.

Drinking Water Contaminants

Various contaminants can adversely impact drinking water, including microorganisms (e.g.,

bacteria, viruses, and protozoa such as cryptosporidium), chemical contaminants (including naturally occurring compounds and anthropogenic or synthetic chemicals), and radiological contaminants (including naturally occurring inorganic and radioactive materials and metals). Some contaminants in raw (untreated) water supplies, such as aluminum, arsenic, copper, and lead, can be both naturally occurring and the result of human activities. Other contaminants, such as household chemicals, industrial products, urban storm water runoff, fertilizers, human and animal waste, nitrate (from fertilizers and sewage), and pesticides, may also end up in raw water supplies (EPA, 1999a; Health Canada, 1998).

Certain contaminants pose a concern when present in drinking water because of possible health consequences associated with these substances. These contaminants may be in raw water as a result of industrial and agricultural activities or treated wastewater discharges (Minnesota Pollution Control Agency [MPCA], 1997). Some may also be present in treated water as a result of chemicals used in the drinking water treatment process (Health Canada, 1998). The impact of contaminants is diluted in a large water body like Lake Michigan but could be more serious in a groundwater source.

In general, drinking water provided by public

Source Water Assessment Program Status

The Safe Drinking Water Act Amendments of 1996 established the Source Water Assessment Program (SWAP) to help States locate and identify existing and potential threats to the quality of public drinking water for the purpose of fostering local efforts to benefit and protect this resource. States are responsible for assessing the condition of source water for all public water systems within their borders.

Each states' source water assessment program differs since they are tailored to each state's water resources and drinking water priorities. However, each assessment must include four major elements:

- delineating (or mapping) the source water assessment area,
- conducting an inventory of potential sources of contamination in the delineated area,
- determining the susceptibility of the water supply to those contamination sources, and
- releasing the results of the determinations to the public.

Wisconsin and Illinois of the Lake Michigan basin states have completed all steps in the assessment process. The remaining Region 5 States are in the process of completing assessments. Regionwide, assessments have been produced for approximately 82% of all water systems. Assessment distribution to the public is progressing at a slower rate, in order to ensure that sensitive information is properly delivered and that opportunities for encouraging local voluntary protection efforts are maximized.

More information on this program is available at the following internet address: <http://www.epa.gov/safewater/protect/assessment.html#Anchor-Source-11481>.

water suppliers is likely to remain of good quality because of the multiple pollutant barrier approach being implemented across the basin. Not only are treatment systems and operating practices continually improving, increased monitoring is also providing more information about source water supplies and the need for source water protection. In the past two years, greater emphasis has been placed on assessing and protecting raw sources of drinking water. Both the source water assessments that were completed for public water supplies by 2003 (see text box) and recent data collected from 22 sites around the Great Lakes are providing more information about raw water supplies.

Drinking Water Monitoring and Reporting

Continuing efforts must be made to inform health professionals and the public of the results of analyses of drinking water. EPA requires that public water supplies be monitored for bacteriological, inorganic, organic, and radiological contaminants. The analyses of drinking water include tests for the physical and

chemical characteristics of the water as well as for contaminants from natural sources or human activities. In addition, the EPA Office of Groundwater and Drinking Water (OGWDW) web site at www.epa.gov/OGWDW/ provides detailed information on the nation's drinking water, including drinking water and health information, drinking water standards, and local drinking water information. Community water suppliers deliver high-quality drinking water to millions of people every day, and a network of government agencies is in place to ensure the safety of public drinking water supplies.

Inadvertent Water Contamination

Contamination of drinking water sources can result inadvertently during the production, use, and disposal of the numerous chemicals used in industry, agriculture, medical treatment, and in the household conveniences. Knowledge of the environmental occurrence or toxicological behavior of contaminants has resulted in increased concern for potential adverse environmental and human health effects. For many contaminants, public health experts have incomplete understandings of their toxicological

Public Health Security and Bioterrorism Preparedness and Response Act of 2002

The Act requires community drinking water systems that serve populations greater than 3,300 persons to conduct assessments of their vulnerabilities to terrorist attack or other intentional acts intended to substantially disrupt the ability of the system to provide a safe and reliable supply of drinking water. The systems must submit a copy of their vulnerability assessments to the US EPA. Prior to receiving the assessments, EPA has the responsibility to implement a protocol to protect the vulnerability assessments from unauthorized disclosure.

The Act requires every community water system that serves a population of greater than 3,300 persons to:

1. Conduct a vulnerability assessment. The vulnerability assessments shall include, but be limited to, an assessment of the following:
 - pipes and constructed conveyances,
 - physical barriers,
 - water collection, pretreatment, treatment, and storage facilities,
 - electronic, computer, or other automated systems,
 - use, storage, or handling of various chemicals, and
 - operation and maintenance of the system.
2. Certify and submit a copy of the assessment to the EPA Administrator (see schedule below);
3. Prepare or revise an emergency response plan that incorporates the results of the vulnerability assessment; and
4. Certify to the EPA Administrator, within 6 months of completing the vulnerability assessment, that the system has completed or updated their emergency response plan.

Systems serving population of:	Certify and submit Vulnerability	Certify Emergency Response
100,000 or greater	March 31, 2003	Six months following the completion of the vulnerability assessment
50,000 - 99,999	December 31, 2003	
3,301 - 49,999	June 30, 2004	

significance (particularly effects of long-term exposures at low-levels). The need to understand the processes controlling contaminant transport and fate in the environment, and the lack of knowledge of the significance of long-term exposures has increased the need to study environmental occurrence down to trace levels. Furthermore, the possibility that environmental contaminants may interact synergistically or antagonistically has increased the need to define the complex mixtures of chemicals that are found in our waters (<http://toxics.usgs.gov/regional/emc.html>)

Water Quality Tracking

A key action was set in the 2002 Great Lakes Strategy that, "Beginning in 2002, the US Environmental Protection Agency (USEPA), in cooperation with local utilities, will track water quality at the intake points of selected drinking water treatment plants around the Lakes. Findings will be reported to the public through the biennial State of the Lakes Ecosystem Conference (SOLEC) State of the Lakes report." <http://www.epa.gov/glnpo/gls/gls04.html>.

As of April 2003, the USEPA has examined data

provided by 114 public water systems in the Great Lakes basin and by the U.S. Safe Drinking Water Information System. Specifically, USEPA has evaluated various contaminants, including the following:

- Atrazine, an agricultural pesticide
- Nitrate and nitrite, which are naturally occurring nutrients found at high levels in fertilizers
- Total coliform bacteria, E. coli, protozoa, giardia, and cryptosporidium may contaminate water supplies after sewage spills

Drinking Water Education

Drinking Water Academy

Established by the U.S. EPA Office of Ground Water and Drinking Water, the Drinking Water Academy (DWA) is a long-term training initiative whose primary goal is to expand EPA, State, and Tribal capabilities to implement the 1996 Amendments to the Safe Drinking Water Act (SDWA). In addition to providing classroom and Web-based training, the DWA acts as a resource for training materials pertaining to SDWA implementation. EPA formed the DWA to help States, Indian Tribes and water suppliers enhance their program capability to meet the public health protection objectives of the SDWA requirements. The 1996 SDWA Amendments created a number of new programmatic challenges for the States, Tribes, and the water systems they regulate. The Amendments also provided new funding opportunities to meet these growing needs. DWA training will support EPA, State, and Tribal efforts to implement these new regulations, <http://www.epa.gov/safewater/dwa.html>.

Drinking Water Security Education Materials

The USEPA has recently developed a collection of useful education and resource materials on drinking water security. The information includes resources on Emergency preparedness, drinking water security, and law enforcement information. All materials can be found at: <http://www.epa.gov/safewater/security/flyers/>

USEPA has also examined the turbidity, taste, odor, and organic carbon content of drinking water supplies to assess any other potential health issues. Of the public water systems evaluated between 1999 and 2001, none exceeded drinking water standards for atrazine, and only one exceeded drinking water standards for nitrate and nitrite after treatment. However, atrazine, nitrate, and nitrite are detected at elevated levels in the Great Lakes, which indicates that advanced treatment technologies prevent the entry of significant concentrations of these contaminants from entering drinking water systems. For total coliform and E. coli, only one violation of drinking water standards occurred between 1999 and 2001 in the Great Lakes basin. Finally, public water systems rarely have problems with turbidity, taste, odor, or organic carbon content.

Remedial Action: Drinking Water State Revolving Fund

The Nation's water systems must make significant investments to install, upgrade, or replace infrastructure to continue to ensure the provision of safe drinking water to their 240 million customers. Installation of new treatment facilities can improve the quality of drinking water and better protect public health. Improvements are also needed to help those water systems experiencing a threat of contamination due to aging infrastructure systems.

The Safe Drinking Water Act, as amended in 1996, established the Drinking Water State Revolving Fund (DWSRF) to make funds available to drinking water systems to finance infrastructure improvements. The program also emphasizes providing funds to small and disadvantaged communities and to programs that encourage pollution prevention as a tool for ensuring safe drinking water. The funds are passed from EPA to each state. For more information see <http://www.epa.gov/safewater/dwsrf.html>.

Drinking Water Quality Reports

Information on local water quality is available from several sources, including state public health departments and local water suppliers. To inform

the public of the results of analyses of drinking water and to demonstrate a commitment to protecting human health, each community public water supplier is required to generate an annual Consumer Confidence Report that is made available to all residents receiving water from the water system. A Consumer Confidence Report provides information about the source of water used, its susceptibility to contaminants, the levels of contaminants detected in the water, the likely sources of contaminants, and potential health effects of any contaminant detected at a concentration above its maximum contaminant level (MCL). Consumer Confidence Reports can be reviewed to get an indication of the overall quality of treated surface water and groundwater and the condition of the drinking water provided. In addition, starting in 2003, the states will

distribute information on the status of the source waters used by public water suppliers and the level of susceptibility of those source waters to contamination.

Next Steps

- Seek funding to develop a source water protection GIS system.

Long-Term Objectives

- By 2005, plans will be in place to address drinking water susceptibility to contamination.
- By 2006, source water assessments (including security assessment) will all be completed and reported.

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